IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Smith, et al.

Serial No.: 9/660,257

Filed: 09/12/2000

Title: METHODS AND MIXTURES FOR TREATING DISTRESSED TREES

Art Unit: 3643

Examiner: Gellner

Hon. Commissioner of Patents
Box Fee Amendment
Washington, D. C. 20231.

AFFIDAVIT

WHEREAS, the undersigned,

I, John Cooper, horticulturist, resident of Denton County, Texas 76209, citizen of the United States of America, with offices at the Denton County Government Center, 306 N. Loop 288, Suite 222; Denton, TX 76209-4887 do hereby state that :

As a trained professional and practicing horticulturist I am interested in treatments to conserve and protect trees in our area and particularly our native post oaks which are so easily stressed by construction injury and especially root trauma.

I have lived and worked in Denton County as the County Extension Agent-Horticulture since 1985 and have found that the loss of post oaks due to construction injury to be the single-most

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EXHIBIT
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common issue I have faced from the first day on the job to the present. Post oaks are the climax species in the Eastern Cross Timbers vegetational region of Texas.

In order to help whomsoever may read this statement understand the condition of our native oak forest and the forces they endure during the process of urbanization, I am attaching a publication called, "The Care and Feeding of Post Oaks in Denton County", copies of which I provide to customers in response to calls for information which number in the hundreds per year. As anyone will see, my approach, and I consider my understanding to match that of anyone in the field, is to relieve external stresses that might impede the trees' recovery from construction injury and especially root trauma.

Nowhere in the document will you find a reference to your treatment because I have nowhere found it in the literature. As a trained horticulturist with two science degrees from the Department of Horticultural Science at Texas A&M University in College Station, I am familiar with rooting hormone. They are commonly used when rooting cuttings.

It is my understanding that your patent has been denied on the basis that rooting hormones have already been patented for use in tissue culture and for rooting cuttings. These are propagation methods and have no relation to your tree stabilization and root rejuvenation application. In hindsight, I might say, why didn't I think of this? Well, the fact is, Dr. Smith did, and I didn't.

I am not a patent lawyer and can't say I know patent laws but I can say that you have, to my knowledge, a previously untried method of rejuvenating construction traumatized trees. The nearest application to this in my mind is the inclusion of rooting hormone in "root stimulator" used to stimulate roots when transplanting trees. Planting trees is an entirely different practice from saving construction traumatized trees and the application of rooting hormone for this purpose has, to my knowledge, not been previously tried much less pursued as a standard arborilogical practice such as here proposed.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

The Commissioner is hereby authorized to charge any fees or credit any overpayment to Deposit Account Number 23-2426 of WINSTEAD SECHREST & MINICK P.C.

If the Examiner has any questions or comments concerning this paper or the present application in general, the Examiner is invited to call the attorney for the undersigned, James J. Murphy at (214) 745-5374.

~~Inventor's~~ signature:

State of TEXAS §
§
County of Denton____ §

John Cooper

Before me, Wanda LaGrone, a notary public, on this day personally appeared John Cooper, known to me to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same for the purposes and considerations therein expressed.

Given under my hand and seal on the 7th day of October, 2002.

Wanda LaGrone
Notary Public Signature

WANDA LaGRONE
Notary Public, State of Texas
My Commission Expires
NOV. 9, 2002

Wanda LaGrone
Notary Public Printed Name

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Texas Cooperative EXTENSION
The Texas A&M University System

THE CARE AND FEEDING OF POST OAKS IN DENTON COUNTY

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THE ROYAL OAK

Post oaks are the crowning achievement of the plant kingdom in the Cross Timbers geographical region of Texas. Post oaks are highly adapted to our soils and climate. After all the trees we have planted, post oaks remain the dominant tree species in Denton County.

STRESSES OF URBAN BLIGHT

Post oaks have a well-deserved reputation for succumbing to the stresses of "urban blight". This tree simply cannot stand root disturbance. When a property is purchased for development and a decision is made to preserve post oak trees, one simple rule must be followed. At least one-half of the root system must be left undisturbed.

The roots of native oaks extend away from the trunk a distance equal to the tree height or twice the diameter of their limb spread whichever is greater. Using this formula, a 30 ft. tall tree would have a root diameter spread of 60 ft. but would be even greater than 60 ft. if the tree had a canopy spread greater than 30 ft. in diameter. If your objective is to save a tree, err on the side of conservation and use the larger root estimation figure.

Tree roots are not as deep as most people think. The roots that do the actual work of absorbing water and minerals are located in the topsoil. The topsoil can be a few inches or a few feet deep. A good site will have a couple of feet of topsoil and will withstand more abuse than poor sites with only a few inches of topsoil. If your site has one foot of topsoil and you scrape away the top six inches, you have reduced the volume of the effective feeder roots by half in the area you scraped. The most effective feeder roots are closest to the surface, which is where the soil is richest and the oxygen content the highest. When you scrape the topsoil away, you actually remove the most effective feeder roots.

To help reduce root disturbance during construction, set a fence up around the root area to be conserved of each tree to be protected, before moving heavy equipment onto the site. Work the area inside the fence, if necessary, with hand tools.

Because roots run radially from the trunk, even shallow trenching results in significant root losses. Utility lines can be installed in most situations by boring under trees. If the boring is done at the depth of the subsoil, i.e., below the topsoil, root losses will be significantly minimized. Considering the cost and value of trees, boring should be employed whenever utilities are installed in wooded developments.

Septic systems should be installed in areas where trees are not growing. If you do not have a place barren of trees, put the septic system where you least want trees to be growing. Septic systems kill trees. What the leach line trenching does not kill, the constant soil saturation will. Small scale sewage treatment technology for single family dwellings using aerobic digestion takes up less space than anaerobic septic systems and do not require the installation of field leach lines. The treated water is applied as gray water irrigation in the landscape. Be careful to avoid over-watering, i. e. watering more than twice a week.

If filling is required under a tree's canopy, tile aeration systems can be installed to assist air passage and gas exchange with the surface. Not all tile aeration systems are of equal value. Consult a professional before taking heroic or expensive measures to save a tree with tile aeration.

Ragged and torn roots resulting from trenching machines, backhoes, dozers, loader buckets and other heavy equipment do not repair. They simply rot back and new healthy root tissue is invaded by disease organisms. When roots are cut by trenching or other means, they should be re-cut with sharp pruning tools. This assists in regeneration of healthy roots at the ends of pruned roots.

If trees are known to be under stress, soluble high phosphorous and high potassium fertilizers can be injected into the root zone to supply developing roots. Fertilizer trunk injections should not be used. Special care also should be taken to protect against insects and diseases. Maintaining even soil moisture availability in and around the remaining intact root system will assist tree recovery.

Just as deciduous trees are best dug for transplantation in the dormant season, so is site work and soil disturbance of any kind, best done in the dormant season. Install sprinkler systems or patios, for instance, in the winter rather than the summer if significant root disturbance is likely. Make estimates of root losses and remove a commensurate amount of live wood up to, but not more than, one-third of the total foliage canopy to balance the shoots with the roots. Start by removing weak and diseased wood. Then prune the lowest limbs on the trunk which usually receive the least light and are usually the least productive in terms of returning energy to the tree.

If you are constructing a home, take pictures of "dirt work" during construction. This way, you can "recollect" the amount of root loss for each tree so you will know how much to prune off the top. After final grading, it's hard to remember.

TENDER LOVING CARE

Through the ages, our native oaks have endured the extreme weather conditions of North Texas, so we figure they're as "tough as a boot." In their natural state, post oak roots are covered by several layers of fallen leaves and rich leaf compost. We strip all that off and grow turfgrasses over their roots, which aggressively compete with tree roots for available water and nutrients. Suddenly they are no longer in a natural state. They are out of their element, so to speak.

It is better to grow ground covers, such as English ivy and Vinca, rather than turf under trees. This allows you to water less and allows the leaves to fall and nestle into the groundcover creating the natural leaf litter mulch to which they are accustomed and adapted. When planting ground covers do not till the ground under the trees. To prepare the soil for planting, simply spread a three or four inch deep layer of well-rotted compost over the ground to be planted and insert two, three or four inch pots of ground covers directly into the compost. Flowers planted under trees should also be planted in the same manner to avoid root damage. Never till the ground under native oaks if you can possibly avoid it.

Post oaks and blackjack oaks are among the last trees to leaf out in our area. They are also among the earliest to finish growing each spring. Fertilizing your native oaks early will help them take better advantage of their short growing season by putting on more leaves and making each leaf bigger. This means more shade and healthier trees in the summer. Use a balanced fertilizer on mature trees. High nitrogen fertilizers may stimulate excessive growth, thereby depleting reserves on already weakened trees.

Broadcast five pounds of 15-5-10 or equivalent fertilizer per 1,000 square feet of effective rooting area in at budbreak in late March or early April and repeat the application every six weeks as long as new growth is flushing out at the

shoot tips. The effective root area extends in all directions as far from the trunk as the tree is tall. Late growth flushes may occur as late as June in wet years. If you are growing ground covers under the trees, forget the fertilizer and simply broadcast one inch of well-rotted, finely-screened compost every six months anytime during the year. This will be adequate for both trees and ground covers.

Water management under our native oaks is important to their long term health. Most often we irrigate according to the needs of our turf instead of our trees. Turf is commonly irrigated twice a week which is not necessary for turf except in cases of the coarsest sands. Applying one inch of water once a week in the absence of rain for your turf. This will be sufficient fro your trees but if you will put out two inches every third or fourth watering this will encourage deeper rooting of your trees. The minimum for good maintenance of native oaks, during the growing season in the absence of rain, is a single, two-inch application of water once a month. This is only possible when turf is not used. Watering more often than once a week is detrimental to native oaks. You can never put too much water on trees; you can only water too often. When you water, water deeply.

THE THREAT OF PESTS

Because native oaks in developed home sites and businesses are already under stress, additional stress from insects and diseases can sometimes be fatal. Making periodic inspections of foliage for signs of insects and diseases throughout the growing season will often help you spot a problem before serious harm is done.

Among the pests most likely to threaten your native oaks are scale, plant bugs, cankerworms, aphids, lacebugs, mites, borers and anthracnose. Each alone can cause serious tree health problems. In combination and in association with other stress factors, a particular insect or disease pest can strike the fatal blow.

Perhaps the single most beneficial spray for native oaks is dormant oil. This spray, applied during the dormant season helps control one or more overwintering stages of scale, plant bugs, aphids, lacebugs and mites, virtually every major pest except cankerworms and anthracnose. The dormant oil will not eliminate these pests but will reduce their numbers so the need to spray hard pesticides during the growing season is less likely.

Young developing spring leaves are tender and susceptible to anthracnose, plant bugs and cankerworms. A close inspection of your tree's foliage from budbreak through May will help you discover any developing problems with these pests.

Hypoxylon Canker

There is no known disease that kills perfectly healthy post oaks in a matter of weeks or months. The oak wilt fungus is such a disease on live oaks and red oaks but post oaks are not susceptible to the oak wilt fungus. Another fungal disease, hypoxylon canker will kill apparently healthy post oaks in a matter of weeks or months. The operative word here is "apparently" because hypoxylon canker only attacks weak trees. It is the final stage, "the straw that broke the camel's back", "the last out in the ninth inning", in a stress syndrome known as oak decline.

Near death or shortly after limb or tree death from hypoxylon the outer bark sloughs off and exposes large masses of brown, dusty one-celled spores on the trunk or dead branches. These spores are gone within a few weeks and the infected surface turns a grayish-silver. Gradually this area erupts into numerous black fruiting structures. Mature fruiting structures forcibly discharge sexual spores which are blown to surrounding trees where new infections may occur. Entry appears to be through injured surfaces on limbs or trunk. The fungus grows best at 86° F., but can grow at 50° F. and 100° F. Spread to other trees may be reduced by cutting down trees infected with hypoxylon as soon as they die and storing their wood as firewood under a clear plastic film to keep the spores and bark beetles from disbursing the fungus.

In virtually every case, hypoxylon canker only hastens the death of trees. As weak as a tree must be to fall prey to this disease it most probably will soon die of exhaustion anyway. The strategy for prevention of this disease is to understand oaks and their cultural preferences and treat them with respect so they have a chance to naturally fight off infection.

Trees are stressed from a combination of factors including root disturbance, overwatering, drought, heat, shading, lack of winter chilling, insects, herbicides, etc. Trees continually under stress from one or more stress factors eventually decline in energy reserves which are stored as starch grains in sapwood. In a depleted energy state, trees can no longer resist the weak pathogenic activity of the hypoxylon fungus and the fungus takes over almost overnight.

The bark is cleaved from the tree by a sudden growth and swelling of a mat of fungal spores revealed as a mass of olive green or tannish brown dust formed over the sapwood. These spores which are the "seeds" of the disease are released to the air and blow around in the environment. Many of the spores land on neighboring trees. Nearby weak trees may serve as susceptible hosts for the fungus, contracting the disease, and in turn, spreading the epidemic further still, repeating the cycle of death.

Wide growth rings translate into good stored energy reserves. Narrow growth rings translate to low energy reserves. Growth rings are reflected in the annual shoot growth. The length of annual shoots in full sunlight at the periphery of the canopy should be six inches or longer. Trees with less than 3 inches of annual shoot growth at the periphery of the canopy exposed to the full sun indicate narrow growth rings and a low energy state and consequently subject to the ravages of this weak but opportunistic fungal pathogen in the genus, *Hypoxylon*.

As weak as a tree must be to fall prey to hypoxylon it most probably would soon die of exhaustion anyway if growing, climatic, and/or cultural conditions do not improve. If, however the tree is in the balance, and the growing conditions do improve before it contracts the fungus then it may recover and go on to live a normal, healthy life.

The strategy for controlling hypoxylon is to reduce the number of spores in the vicinity by removing the infectious trees and improving the cultural conditions for those still living. Trees showing signs of active cankers should be cut down and covered with a tarp or plastic sheeting to prevent release of spores to the environment. The wood can be pushed and burned because the heat kills the spores but if it is kept for firewood it should be covered until the cankers turn silver.

Fertilize any tree, including post oaks, at the beginning at bud break in late March or early April with five pounds of 15-5-10 per 1,000 square feet of effective root area which extends in all directions, as far from the trunk as the tree is tall. Repeat the application at six-week intervals so long as new growth is appearing at the shoot terminals throughout the spring and early summer.

If you do not have turf under your trees, one of the best things you can do for them is to spread two inches of well-rotted, finely screened compost over the root area and then add one additional inch of compost every six months thereafter. This simulates the natural leaf litter mold ground conditions to which they have become accustomed over the last few thousand years. This compost layer not only supplies the minerals the trees need but acts as a mulch to keep the roots cool, moist and functioning.

Optimally post oaks should receive two inches of water once every ten days throughout the summer in the absence of rain. If you have turf under your trees, apply one inch of water per week for the turf and then apply an extra inch every third watering to reach the deeper roots of the trees. On particularly sandy soils you can tighten your watering interval to every five days if your turfgrass is stressing. Consider replacing turf under trees with less competitive mulched, broadleaf evergreen ground cover beds and water once every ten days.

Anthracnose

Anthracnose is a fungal leaf spot that reaches epidemic proportions under high rainfall conditions. Numerous brown spots about one-quarter of an inch across appear on the upper leaf surface in the spring and summer. A fungicide containing chlorothalonil, applied when leaves are half grown and repeated 10-14 days later, will help protect trees from initial spring infections. Subsequent sprays may be necessary during periods of excessive rainfall especially in late spring or when summer growth flushes occur. Occasionally, several days (3-5 days) of continuous wet weather occurs under mild temperatures (80-85 degrees F.) during the summer and even mature leaves will be infected. The cases are rare, but fungicide applications made immediately following the wetting period may help.

Lacebugs

Lacebugs are the number one insect threat to native oaks in our area. Lacebugs seriously weaken oaks and even occasionally kill them. These tiny insects suck sap from the underside of leaves. As the feeding continues, the upper leaf surface assumes a grayish cast.

If the leaves on your native oaks appear unhealthy, inspect the underside of the leaves for lacebugs. Adult lacebugs are mostly off-white, about 1/8 inch long, flattened and rectangular. Nymphs are smaller, wingless, more oval with a mottled, chocolate-brown and off-white coloring. In an exploding population, nymphs typically out-number adults by a wide margin.

Numerous tiny jet-black eggs no larger than a speck can be found in loose clutches of a dozen or more. A thin shellac cements the eggs to the bottom of the leaf. Add a few white cast skins from nymphal molts and you have the grisly scene complete.

Lacebugs develop rather quickly, taking only 30 days to go from egg to adult. Five or more generations may pass in a year's time. Oak lacebugs overwinter as eggs and adults. Nymphs and adults begin feeding on new foliage in the spring. By July, their numbers have usually grown to detrimental levels. Continued feeding into the fall results in significant weakening of infested trees.

If lacebugs are found, consideration should be given to spraying. Knocking the population down early will lower the number of eggs and adults in succeeding generations. Preserving existing foliage through the end of October will help save energy for the following spring's leaf crop. Our native oaks have one primary growth flush each year. If they miss it, they've had it. Lacebugs can be controlled with insecticides containing imidacloprid such as Merit® or Bayer Advanced® Tree and Shrub Insect Control. Two or three applications at 10-14 day intervals are required to kill all stages of the insect. As with any insecticide application, thorough coverage using the prescribed rate is essential for effective control.

Aphids

The second most injurious insect to native oaks is the aphid. This tiny, soft-bodied insect, ranging in color from yellow to red or black, may number in the hundreds per leaf. Nymphs and adults up to one-eight inch in size suck sap out of the foliage making the leaves wet and sticky.

Aphids feed on the underside of the leaves. Although they appear the worst in the early fall, they may reach damaging populations at any time during the growing season.

Periodic inspections throughout the growing season will reveal the presence of aphids. If sap is falling from the trees and making the ground sticky below the tree, you have aphids and probably need to spray. Insecticides containing acephate found in Orthene®, dimethoate found in Cygon®, or malathion should be applied at 10-day intervals as needed for control. Insecticidal soaps have also been shown to work well on aphids and is less toxic than the aforementioned insecticides. Remember the sugars aphids remove in the fall could be stored for next spring's shoot growth. If aphids are damaging as late as early October, it would be wise to spray.

Plant Bugs

Running a close second behind aphids and lacebugs are plant bugs. These are tiny green or brown insects in the stinkbug family about one-eighth to one-quarter inch long. They feed by sticking a long needle-like stylet into the leaves and sucking sap from the leaves.

After feeding, a tiny brown pinhead sized spot surrounded by a bright yellow halo is left at the puncture site. As the leaf expands, the leaf tears at the puncture site creating irregular holes ranging up to one quarter-inch across.

Infested leaves are often dwarfed, puckered and twisted. The greatest damage occurs during the three-week period between budbreak and full leaf expansion in the spring. An insecticide application made soon after budbreak and repeated 10 days later will significantly reduce their damage.

Usually, plant bugs are discovered too late to control in the current season. The probability is strong they will be a problem next year if they have reached damaging levels in the current season. Scheduling plant bug sprays for the following spring is advised for trees showing significant damage in the current year. Use carbaryl found in Sevin® for control.

Mites

Mites are a serious health detriment to our native oaks. They are tiny, nearly microscopic (you need a magnifying lens to see them), eight-legged arthropods. They are not actually insects and are more a kin to spiders and ticks than worms and aphids. The most famous garden mite is the red spider mite.

All mites rasp leaf tissue and suck leaf juices. They congregate along the sides of major veins but may be found wandering anywhere on the leaf. Several species feed on the bottom and top of oak leaves.

The same specking and loss of chlorophyll called "bronzing", associated with mite feeding on tomatoes and marigolds, appears on oaks as well. After the first signs of bronzing, make a close inspection for mites using a 10X or greater magnifying lens. If mites are found, spray twice, 5-7 days apart with dicofol found in Kelthane®, fenbutatin found in Vendex® or cyfluthrin found in Bayer Advanced® Home and Garden Spray. Mites can go from eggs to adults that lay eggs in as little as one week. Eggs are not controlled with insecticides so the second spray applied within a week of the first application is essential for satisfactory control. Three sprays may be required for particularly heavy infestations.

Scale

Limbs, pencil-sized and up, are often covered with tiny, aphid-like insects with a small flattened disk-like covering called scale. Scale insects over-winter as eggs which hatch in the early spring and crawl to neighboring, expanding shoots where they sink their sucking mouthparts and begin feeding. Once they attach and start feeding, they excrete a waxy coating which covers their body. The scale covering is all you see on the stem. Scale range in size from the head of a pin to one-eighth inch or more and in color from ashy-gray to reddish-brown.

Scale insects draw sap from the trees and weaken them. They are often associated with stem or branch junctures or stem nodes but may be found anywhere along the stem or branch down until the bark turns thick and rough.

Dormant oil is the traditional control for scale, and thorough applications are effective. Spring applications of malathion mixed with summer oil should be applied during the tree's active spring growing phase. This is when the eggs hatch and the nymphs crawl to new stem tissue, and before they settle in and exude their waxy covering. If scale is discovered during the summer and the infestation is severe, spray malathion, acephate, or imidacloprid with summer oil if the temperature is below 85°F for 72 hours following the spray. If temperatures exceed this level, drop the oil from the spray or tree damage could result.

Cankerworms

In the spring and summer of 1978, cankerworms completely defoliated all the oak trees in a 100 mile-wide band running to the west of I-35 from south of San Antonio to north of Fort Worth. In the following spring, 1979, a similar episode occurred but only about half as many trees defoliated. An outbreak of this magnitude has not occurred since. The threat remains, however, and each year, isolated trees suffer significant degrees of defoliation that could benefit from treatment.

Cankerworms are a type of inchworm much like the cabbage looper. Cankerworms are not the light green of the looper but are the same size, about one inch long. They move by hunching their back and looping out in front, measuring an

inch with each "step."

The first sign of cankerworms is a delayed budbreak. You keep waiting for the trees to come out in the spring but they never put on leaves. If you look closely, however, the worms are simply chewing the leaves off as soon as they push out of the bud. Some trees will begin growth but seemingly "reverse" growth, having less foliage than the day before.

If you suspect cankerworms might be infesting your trees, take a closer look. Bump some limbs. If there are very many they will fall out of the tree and be suspended by long silken threads, kind of like bungy jumping for worms.

If cankerworms are found in any numbers, spray with insecticides containing the microbial insecticide *Bacillus thurengiensis* also known as BT. Worms will take three days to die but they will become sick and stop feeding within a few hours of ingesting the first bite. Inspect the trees one week later for a resurgence of worms and spray again if necessary.

Borers

Borers do not attack healthy trees. They will attack weak trees, i. e. those in the balance. Borers can tip the balance and be the final cause of tree death. If your trees are putting on less than 3-4 inches of annual shoot growth they should be sprayed for borers as protection.

Borers come in a range of sizes that fall into two general categories: roundheaded borers and flatheaded borers. The larvae of roundheaded borers burrow throughout the tree trunk including the heartwood. The larvae of flatheaded borers tunnel in the xylem wood just beneath the bark. They both cause serious damage.

Borers emerge from trees as adults from April through September to mate and lay eggs for the next generation. The larvae enter the wood of the tree soon after hatching from the eggs. Once the borers enter the tree they cannot be controlled and will proceed to develop within the tree.

If your oaks are stressed they should be treated to prevent borer damage. Apply a soil drench of imidacloprid found in Merit® or Bayer Advanced® Tree and Shrub Insect Control at the first sign of budbreak in the spring.

Oak Wilt

The only disease that will kill a perfectly healthy native oak tree is oak wilt, *Ceratocystis fagacearum.* This fungus will infect and kill perfectly healthy blackjack oaks but does not infect post oaks. Fortunately, only one in twenty native oaks are blackjack oaks. The remainder are post oaks. Furthermore, blackjacks are so scattered that, so far, no oak wilt epidemic has been discovered in this tree species, only isolated trees have been infected.

Although it is highly unlikely that your trees have or will ever contract oak wilt, it would be good to identify your trees as either post oak or blackjack oak to know if the possibility even exists. Although several differences can be observed in the trees, including a darker, almost black, bark on blackjack trees, and a more pendulous branching habit, the most distinguishing feature is that the mid-vein that feeds each leaf lobe terminates at the leaf margin in the post oak. In the black jack oak, the mid-vein feeding each leaf lobe extends beyond the leaf margins and terminates in a fine, pointed but supple, down-turned cat's claw.

If you have a blackjack oak that appears perfectly healthy and then dies suddenly in a period of only three to eight weeks, then the possibility exists that your tree died of oak wilt. Oak wilt can only be confirmed by laboratory diagnosis. If you think your trees may have oak wilt, contact the Denton County office of the Texas Agricultural Extension Service for instructions about taking oak wilt samples.

If you receive a laboratory report with a positive diagnosis for oak wilt and you have other blackjack oaks in the vicinity, you may want to treat them for oak wilt to keep them from contracting the disease. Currently the only treatment for oak wilt is to inject Alamo© fungicide into the root flares and this must be done by a trained professional. Blackjacks die so soon after they are infected with oak wilt that they need to be treated before they contract the disease.

IN SUMMARY

Our native oaks possess an inherent will to live and will do their best to survive whatever circumstances they encounter. Sometimes, try as they might, the challenges we place before them are insurmountable. Except for oak wilt which does not attack post oaks, there is no single disease that takes our native oaks out and there is no magic pill that will restore their health. They are subject to the vicissitudes of life and must struggle to overcome them, preferably with our assistance rather than our antagonism.

Following the initial trauma of construction and landscape establishment, tree health and vigor must be restored, slowly, over time, by the tree itself gathering strength. This can happen only if the needs of trees are understood and adequately met.

For all the worry they cause, our native oaks are among our most beautiful, plentiful and long-lived trees. By exercising caution during construction, watching our watering habits, making timely applications of fertilizer or well-rotted compost, and spraying for insects and diseases when necessary, our native oak forest will persist for generations to come.

When we develop a new oak forest for housing we tend most often to remove the young trees and leave the large, mature oaks. All living things have a life span and many of the mature oaks we select are actually entering old age when their life span may not be too far from running out. As trees reach maturity and old age their canopies tend to flatten out on top and they grow more broad than tall. Crowded trees, of course, do not spread out but simply expire, and at an earlier age.

Shoot length becomes ever shorter as vigor and vitality drop in a tree. Strong, healthy oaks will have shoot length of 6-10 inches. You can look at any tree and examine the length of shoot for the past five or six years and see how the tree has fared over time. Many times you will see a declining tree, whether from old age or abuse, which has several years of accumulated shoots that average only one to three inches of growth before they die. Shoot length is a good measure of the general health condition of a tree. A tree with less than 3 inches of shoot growth is declining in vigor and a tree with 3-6 inches of shoot growth is in the balance.

In the natural setting young trees replace old trees as they die. All trees, even oaks eventually die. Since we do not have young trees coming up through the forest floor to replace the aged and dying, we need to plant new trees to take their place.

The single best replacement tree for our native oaks is the bur oak. Of the trees in the commercial trade the bur oak is in every respect the closest in form and habit to the post oak itself but, contrary to the post oak, is one of the fastest growing trees we can plant.

Other desirable shade trees suitable for planting are bur oak, live oak, shumard oak, chinquapin oak, pecan, bald cypress, cedar elm, lacebark elm, Texas ash, fruitless cultivars of osage orange and Chinese pistache. Most Denton County soils in which post oaks are native are also suitable for growing sweetgum and red maple which are also recommended. Although shorter-lived, several smaller ornamental understory trees such as redbud, yaupon holly, southern wax myrtle, possumhaw holly, Eve's Necklace, Carolina Buckthorn, Rough-leafed Dogwood, and Mexican Plum are also highly suggested to fill gaps in the forest cover. Proper planting and after care methods are essential to successful establishment of any tree and should be studied, understood and followed carefully to prevent lost time and money. For information on young tree planting and establishment contact the Denton County office of the Texas Agricultural Extension Service.

jnc 03/02